DOCUMENT RESUME

ED 303 859 EA 020 660

AUTHOR Davis, Jane Furr; And Others
TITLE On Matching Teaching Approach with Student Learning Style: Are We Asking the Right Question?
PUB DATE Nov 88
NOTE 20p.; Paper presented at the Annual Meeting of the Mid-South Educational Research Association (Louisville, KY, November 8-11, 1988).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Cognitive Style; *College English; *College Freshmen; *Experiential Learning; Higher Education; *Outcomes of Education; Private Colleges; Teaching Methods
IDENTIFIERS *Kolb (David A); *Learning Style Inventory

ABSTRACT

Experiential learning theory, as developed by David Kolb, offers a useful framework for designing courses to meet diverse learners' needs. Kolb describes learning as a two-dimensional process: grasping the experience (or taking in information) and transforming it. In early life, we are primarily engaged in acquiring information and the basic skills for effective functioning. By adolescence, we have developed certain learning preferences, or styles. Kolb developed a Learning Style Inventory identifying four styles: divergers, assimilators, convergers, and accommodators. Learning styles literature is broad, but few studies have directly addressed the relationship between instructor and student learning styles and the effect that the degree of instructor commitment to a particular mode might have on student achievement. As part of a broad spectrum outcomes assessment program, the Kolb Learning Styles Inventory was administered to all 196 entering students enrolled in freshmen English and to their 7 instructors at a small, selective southern liberal arts college. At the end of the semester, course grades were collected. Results showed no significant differences in course grade point averages among students who were matched or partially matched with, or held opposite styles to, their instructors. Further analysis indicated that student divergers, assimilators, convergers, and accommodators showed no significant differences in grade point average. Several reasons for these inconclusive results are presented, along with recommendations for further research. Included are 21 references, 3 figures, and 4 tables. (MLH)

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ED303859

On Matching Teaching Approach with Student Learning Style: Are We Asking the Right Question?

Jane Furr Davis
Christian Brothers College

and

Patricia H. Murrell and Todd M. Davis
Memphis State University

Presented at the Annual Meeting of the
Mid South Educational Research Association
Louisville, Kentucky
November 1988

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ABSTRACT

The literature on learning style is broad but few studies have directly addressed the issue of the relationship between instructor's learning style, student style and the impact that the degree of instructor commitment to a particular mode may have on student achievement.

As part of a broad spectrum outcomes assessment program, the Kolb Learning Style Inventory (LSI) was administered to all entering students (n=196) enrolled in freshman English and to their instructors (n=7) at a small, selective, southern liberal arts college. At the end of the semester course grades were collected.

Results suggest that no significant differences were observed in course GPA between students who were matched, partially matched or held opposite styles to their instructors. Further analysis indicated that student Divergers, Assimilators, Convergers, and Accommodators showed no significant difference in course GPA.

On Matching Teaching Approach with Student learning Style: Are We Asking the Right Question?

Context and Rationale

Experiential learning theory developed by David Kolb (1984) and the larger body of research on human development of which it is a part, including Perry (1970); Erikson (1963); Bloom (1956); Chickering and Havighurst (1981); Levinson (1978); Neugarten (1968); and Kegan (1982) offers a framework which can be useful in designing courses which meet the needs of diverse learners. Kolb describes learning as made up of two dimensions, prehending or taking in information, and transforming or processing that information. The prehending dimension ranges from concrete experience to abstract conceptualization, and the transforming dimension ranges from reflective observation to active experimentation. He suggests that learning occurs as the individual moves through a cycle of concrete experience, reflective observation, abstract conceptualization and active experimentation. The cycle is then repeated at a more complex level.

There has been much written about learning style in higher education, but little attention has been given in using Kolb's theory to the relationship of instructor's learning style, student learning style and student achievement. A teacher brings to the classroom a bias toward learning depending on his/her learning style. This learning style has some influence on the activities and procedures used in the classroom. This paper addresses the question: "Will students whose learning style matches that of the teacher obtain higher achievement in the class than students whose learning style does not match that of the teacher?"

Experiential Learning Theory

In describing a theory of experiential learning, Kolb has drawn primarily on the works of Dewey (1938), who focused on the role of experience in the learning process; Lewin (1951), who stressed the importance of the learner being active in learning; and Piaget (1971), who described intelligence not so much as innate but rather the result of the interaction of the person and the environment.

Kolb describes learning as a four-step process (see Figure I). Learners have immediate concrete experience, involving themselves fully in it and then reflecting on the experience from different perspectives. From these reflective observations, they engage in abstract conceptualization, where they develop generalizations which help them integrate their observations into sound theories or principles. Finally, learners use these generalizations as guides to further action, or active experimentation, and try out what they have learned in new, more complex situations. They then have another concrete experience and the cycle begins again, but this time the learner operates at a more complex level. Thus the experiential learning theory is a cycle but it is best thought of as a helix, with learners having additional experiences, reflecting on them, deducing generalizations about the experiences and then using these as guides to further action at increasing levels of complexity (Murrell & Claxton, 1987).

Insert Figure 1
about here

Another way to look at the cycle is to distinguish between what Kolb sees as the two dimensions of learning: grasping the experience (or taking in information) and then processing, or more accurately, transforming, it (see Figure 1). The grasping dimension of learning (the vertical line) is made up of two adaptive modes (i.e., ways of adapting to the world) which are dialectical in nature. The first is concrete experience, where learners grasp the experience through direct contact, a process which draws more on the right brain, where the emphasis is on felt qualities, a holistic sense and a drawing together of likenesses to recognize patterns. The second is abstract conceptualization where learners grasp the experience through conceptual interpretation and symbolic representation, a process which draws more on the left brain, is more analytical, linear and digital.

Similarly, the transformational dimension (the horizontal line) is made up of two dialectical adaptive modes. In reflective observation learners transform the information through internal reflection. The emphasis is on the information or experience as it is rather than manipulating or changing it. In active experimentation learners transform the information (or test it) in action with an emphasis on manipulation of it and the environment rather than taking them in as they are.

Kolb suggests that in our early life we are primarily engaged in acquiring information and the basic skills needed for effective functioning. By the time we reach adolescence we come to deal with situations in characteristic ways and develop certain preferences in terms of how we grasp experience and transform it (Claxton & Murrell, 1987). To determine people's learning preferences, or styles, Kolb developed a Learning Style Inventory (1985), which identifies four styles (see Figure 2).

Insert Figure 2
about here

The first are "divergers" who prefer to grasp experience through concrete experience and transform it through reflective observation. Their strength is in their imaginative ability and they like to view situations from different perspectives and then weave relationships into a meaningful whole. They are called divergers because they are good at generating ideas and brainstorming. They tend to be people oriented and emotional and they often specialize in the humanities and the liberal arts.

The second are "assimilators" who prefer to grasp experience through abstract conceptualization and transform it through reflective observation. Their strength is in creating theoretical models, and they are called assimilators because they like to assimilate diverse data into an integrated whole. They are primarily interested in abstract concepts and are more concerned about the soundness of the ideas or theories themselves than their application.

Next are the "convergers" who prefer to grasp experience through abstract conceptualization and transform it through active experimentation. Their strengths are the opposite of the divergers and they are called convergers because when presented with a question or a task, they move quickly ("converge") to find the one correct answer. They are relatively unemotional and prefer dealing with things rather than people.

The fourth are "accommodators" who prefer to grasp experience through concrete experience and transform it through active experimentation. Their strengths are the opposite of the assimilators, and they like to focus on doing things and having new experiences. They are risk takers and are called accommodators because they do well in situations where they must adapt to meet new circumstances. They are intuitive and often impatient, even "pushy," and when confronted with a theory that does not match the facts as they see them, they will discard the theory.

The issue of matching versus mismatching of preferred ways of learning has been the subject of considerable writing and debate (Claxton & Ralston, 1978). In designing a course which systematically engages the learner in all four modes, the instructor is placing the emphasis on the development of competence in all four modes rather than accentuating the preferred mode. Thus the cycle becomes a model of human development as the learner becomes increasingly capable of taking in information concretely and abstractly, and of processing or transforming it both reflectively and actively.

Instructor evaluation also becomes an issue in approaching a course utilizing Kolb's model. Kolb describes learning as "...by its very nature a tension- and conflict-filled process" (1984, p. 30), and utilizing the cycle has the potential for increasing that tension and exacerbating the problem of student dissatisfaction. Students who prefer to be taught exclusively by lecture may give a low rating to a professor who pushes them to engage in activities which are more concrete. Those who prefer to reflect on information may object to application and "doing" projects. Some discussion of how learning occurs, the teacher's objectives in terms of increased adaptability on the part of the learners, and reference to the Kolb cycle in particular can help students understand (and appreciate) the rationale behind the course design.

One notion which is helpful in addressing both the matching versus mismatching and the instructor evaluation problems is that of challenge and support (Sanford, 1962). Awareness of learning preferences allows the instructor to provide some activities in which the student is comfortable, and also to provide some activities which challenge or "stretch" the student to engage in modes that are less comfortable.

Methods

The LSI was administered to all entering freshmen (n=196) in their English classes at a small, southern, liberal arts college. At the same time, the LSI was administered to all the freshmen English instructors (n=7). No explanations of the instrument or Kolb's theory were given to the instructors or students. At the end of the semester, the English grades of the freshmen were collected from the instructors. Table 1 shows the frequency of students of each learning style. As may be seen, there were almost twice as many divergers as for any of the other styles. This may be an artifact of the liberal arts college, as divergers tend to be people oriented and often specialize in the humanities and liberal arts.

Insert Table 1 about here

Table 2 indicates the frequency of learning styles of the teachers. As may be seen from the table, there were also far more teachers who were divergers. Perhaps again this is an artifact of the choice of class, English, as the class in which the data were collected. There were no teachers who were accommodators.

Insert Table 2 about here

Analysis and Discussion

Figure 3 illustrates frequency of students' grades by the learning style of the student and the Freshman English Instructor Learning Styles. An examination of the figure indicates a high proportion of A's and B's, few D's and only 1 F.

insert figure 3
about here

A Kruskal-Wallis one way analysis of variance by ranks indicated that there was no significant difference in student achievement as measured by grade between students who were matched, not matched, or partially matched with the teacher's learning style (Table 3). While there appeared to be a tendency for opposites to have lower grades than students who were matched or partially matched to the teacher's learning style, the results of the analyses indicated that grades were equally distributed across all learning styles of students and teachers.

Insert table 3
about here

Table 4 illustrates the results of a Kruskal-Wallis one way analysis of variance of student grades by student learning style. This analysis indicated that learning style did not influence student grades. There was no significant difference in the mean ranks of the students' learning styles.

Insert Table 4 about here

In an application of Kolb's theory to the classroom, matching the learning style of the teacher and student should make a difference in how well students do in that course. This did not prove to be the case in this study. There are several possible reasons for this occurrence. First, these results may have been obtained because of characteristics of the institution. The college has rather selective admission policies and thus students probably are used to achieving high grades and adapting to the style of the teacher when necessary. In addition, the students are generally considered to be highly motivated and this motivation probably contributes to their adjustment to the teacher's learning style. Further, the institution is highly committed to teaching as its highest priority and teachers strive to provide a learner centered environment and a positive atmosphere for learning (King, 1988).

A second major area which may have contributed to the lack of significant results may be in the relationship between the assessed learning style of the teacher and the actual teaching priorities and instructional methodology used in the classroom. It is unclear from the available literature whether teacher's learning style will always be reflected in their teaching procedures. Other aspects as institutional priorities, academic discipline, difficulty level of the course, and type of student, ie., traditional, minority, may also contribute to the activities chosen by the teacher for a particular course.

A third consideration of the results is the degree of commitment of each teacher to their learning style. Perhaps the degree of commitment to a style influences the activities in the class. That is, perhaps a teacher who is highly committed to a style will be less likely to adapt to the needs of a student than a teacher who is less committed to a style. This is certainly an area for further research.

Summary and Recommendations

This study examined the relationship of teacher's learning style to student grades when the teacher and student were matched, not matched or partially matched by learning style. A Kruskal - Wallis one way analysis of variance indicated no significant differences in course grades for students who were matched, not matched or partially matched with their teacher by learning style. Several explanations were offered for this finding.

Based upon the results of the study, several recommendations are offered:

1. Further research examining the relationship of teacher's learning style to classroom procedures and activities.

2. Further research examining the relationship of teacher learning style and student learning using teachers spanning a wide range of academic disciplines in diverse institutions.

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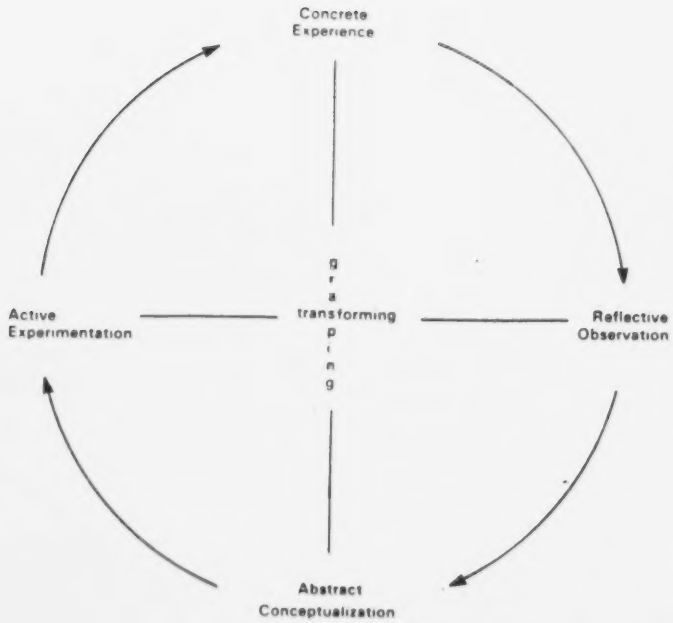

Figure 1 Kolb's Model of Experiential Learning.

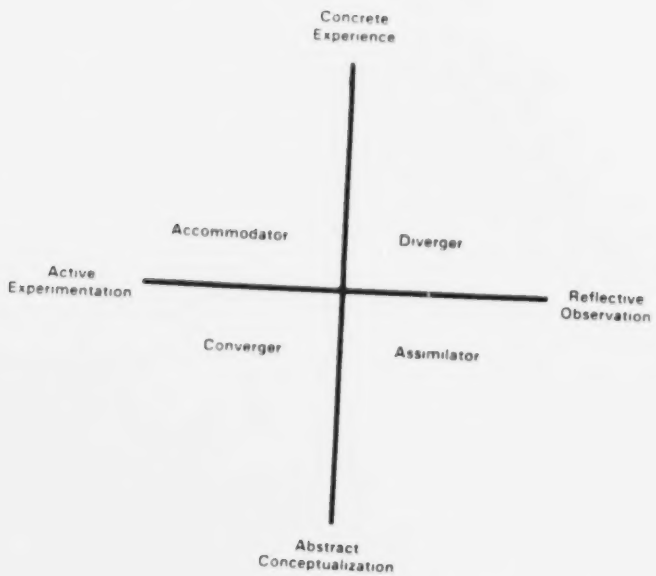

Figure 2. Kolb's Learning Styles

FRESHMAN ENGLISH INSTRUCTOR

LEARNING STYLE

AND

STUDENT GRADES

ACCOMMODATOR

DIVERGER

	A	B	C	D	F
DIVERGER	9	28	13	1	0
ASSIMILATOR	9	10	9	2	0
CONVERGER	4	9	4	1	0
ACCOMMODATOR	2	16	4	0	0

CONVERGER

	A	B	C	D	F
DIVERGER	1	2	3	2	0
ASSIMILATOR	0	2	2	0	1
CONVERGER					
ACCOMMODATOR	2				

ASSIMILATOR

	A	B	C	D	F
DIVERGER	7	6	4	0	0
ASSIMILATOR	1	10	1	0	0
CONVERGER	2	6	2	0	0
ACCOMMODATOR	3	4	2	0	0

Figure 3. Grade According to Learning Styles

Table 1

Frequency of Students by Kolb Learning Style

Learning Style	Frequency
Diverger	81
Assimilator	43
Converger	36
Accommodator	36

Table 2

Frequency of Instructors by Learning Style

Learning Style	Frequency
Diverger	4
Assimilator	2
Converger	1
Accommodator	0

Table 3

Kruskal-Wallis One Way Analysis of Variance of Student Grades by Learning Style Agreement of the Students and the English Instructors

Learning Style Agreement	Mean Rank	Frequency
Matched	97.70	66
Opposite	60.56	8
Partially Matched	101.42	122

Corrected for Ties
Chi Square=4.614, significance .0944

Table 4

Kruskal-Wallis One Way Analysis of Variance
of Student Grades by Student Learning Style

Learning Style	Mean Rank	Frequency
Diverger	97.13	81
Assimilator	96.59	43
Converger	93.49	36
Accommodator	108.88	36

Corrected for Ties
Chi Square=1.8655, significance .6008